

## Albert Krueger, 80; Bacteriologist Led Research on Air Ions

By WOLFGANG SAXON

Prof. Albert Paul Krueger, a University of California bacteriologist best known for his research on air ions, died Dec. 8 at a hospital in Oakland, Calif. He was 80 years old.

Dr. Krueger joined the bacteriology department at the University of California at Berkeley in 1931, served as its head from 1946 to 1952 and retired as professor emeritus in 1957.

He was the first scientific director of the University of California's Naval Biosciences Laboratory, and in World War II he headed the Laboratory Research Unit of the Naval Reserve at Berkeley, where he worked in top secrecy on germ warfare.

As chairman of the bacteriology department at the university, Dr. Krueger became interested in the effects of electrically charged air particles on living organisms, and founded the Air Ion Research Laboratory there. He remained an active researcher until early this year.

### Benefit to Respiratory System

Dr. Krueger and his associates found that negatively charged air particles, or ions, benefited the respiratory system, while an excess of positive ions could damage animal tissue.

According to his studies, air that was rich in negative ions helped kill airborne bacteria, stimulated plant growth, decreased the mortality rate of mice exposed to influenza and checked the levels of the brain hormone serotonin, which is believed responsible for symptoms of migraine, nausea, respiratory distress and irritability.

However, his articles in scientific journals led to a new industry infested with quackery. His assertions that plants grew faster and animals survived infection better in an ion-enhanced environment were translated into devices for the home that, according to their promoters, cured everything from cancer to crankiness.

The devices were confiscated by the Food and Drug Administration in the 1960's.

Dr. Krueger was born in Butte, Mont., and earned his medical degree at Stanford University. He worked briefly in New York on the scientific staff of the Rockefeller Institute for Medical Research before moving to Berkeley.

Surviving are his wife, Mildred; a son, James Krueger of Moraga, Calif.; a daughter, Elsie Cherian, of Trichy, India, seven grandchildren and a great-grandchild.